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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/700,060 | 11/09/2000 | Toshiyuki Kondo | 360842007000 | 9641 |

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Barry E Bretschneider
Morrison & Foerster
2000 Pennsylvania Avenue NW
Washington, DC 20006-1888

[REDACTED] EXAMINER

SIMONE, CATHERINE A

| ART UNIT | PAPER NUMBER |
|----------|--------------|
| 1772 | 7 |

DATE MAILED: 05/21/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

T.D-7

| | | | |
|------------------------------|-------------------------------------|-------------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 09/700,060 | KONDO ET AL. | |
| | Examiner Catherine Simone | Art Unit 1772 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on _____.
 - 2a) This action is **FINAL**. 2b) This action is non-final.
 - 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.
- Disposition of Claims**
- 4) Claim(s) 1-39 is/are pending in the application.
 - 4a) Of the above claim(s) 30-32 and 34-39 is/are withdrawn from consideration.
 - 5) Claim(s) _____ is/are allowed.
 - 6) Claim(s) 1-29 and 33 is/are rejected.
 - 7) Claim(s) _____ is/are objected to.
 - 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
 - a) The translation of the foreign language provisional application has been received.
- 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ . |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Claims 30-32 and 34-39 stand withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 6.

Specification

2. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

3. The abstract of the disclosure is objected to because it exceeds 150 words. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. **Claims 1-29** and **33** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The recitations “FRP” (**claims 1-29** and **33**), “ the respective thicknesses” (**claim 2**), “substantially integrally moulded” (**claim 3**), “CFRP” (**claim 6**), and “substantially uniform along the lengthwise direction of the sheets” (**claim 10**), “where there is used for the reinforcing fibre of the FRP rib a multiaxial woven material comprising a fibre direction at an angle of 45 \pm 10° to the lengthwise direction of the rib” (**claim 5**), “a filler of specific gravity lower than that of both the pairs of sheets” (**claim 12**), “a rigid frame (Rahmen) structure” (**claim 14**), “the flexural rigidity per unit width” (**claim 17**), “extends in the lengthwise direction at substantially a uniform width” (**claim 20**), “the shape in the lengthwise direction is that of a circular arc” (**claim 21**), “a plurality of the FRP roofing materials is connected together in the widthwise direction” (**claim 22**), “a gap is formed between adjacent FRP roofing materials in the widthwise direction connection” (**claim 23**), “at least on one face” (**claim 26**), and “the thickness of the FRP layer comprising carbon fiber is at least 5% that of the FRP sheet” (**claim 29**) are deemed vague and indefinite. Clarification is requested.

The terms "substantially" and "chiefly" in **claim 3, 10, 18, 20 and 25** are relative terms which render the claims indefinite. The terms "substantially" and "chiefly" are not defined by the claims, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Clarification is requested.

Claim 2 recites the limitation "the respective thicknesses". There is insufficient antecedent basis for this limitation in the claim. Appropriate correction is required.

Claim 4 recites the limitation "the thickness". There is insufficient antecedent basis for this limitation in the claim. Appropriate correction is required.

Claim 5 recites the limitations "the reinforcing fibre", "the FRP rib" and "the lengthwise direction". There is insufficient antecedent basis for these limitations in the claim. Appropriate correction is required.

Claim 8 recites the limitation "the form of the reinforcing fibre". There is insufficient antecedent basis for this limitation in the claim. Appropriate correction is required.

Claims 10 and 11 recite the limitations "the spacing" and "the lengthwise direction". There is insufficient antecedent basis for these limitations in the claims.

Claim 15 recites the limitation "the outer face". There is insufficient antecedent basis for this limitation in the claim. Appropriate correction is required.

Claim 16 recites the limitations "the ratio", "the overall thickness", "the thickness" and "the weight". There is insufficient antecedent basis for these limitations in the claim. Appropriate correction is required.

Claim 17 recites the limitation "the flexural rigidity per unit width". There is insufficient antecedent basis for this limitation in the claim. Appropriate correction is required.

Claims 18 and 20 recite the limitation "the lengthwise direction". There is insufficient antecedent basis for this limitation in the claims. Appropriate correction is required.

Claim 19 recites the limitation "the cross-sectional shape". There is insufficient antecedent basis for this limitation in the claim. Appropriate correction is required.

Claim 21 recites the limitation "the shape in the lengthwise direction". There is insufficient antecedent basis for this limitation in the claim. Appropriate correction is required.

Claims 22 and 23 recite the limitation "the widthwise direction". There is insufficient antecedent basis for this limitation in the claims. Appropriate correction is required.

Claim 24 recites the limitation "the connection region". There is insufficient antecedent basis for this limitation in the claim. Appropriate correction is required.

Claim 25 recites the limitation "the matrix resin". There is insufficient antecedent basis for this limitation in the claim. Appropriate correction is required.

Claim 29 recites the limitations "the thickness", "the FRP layer" and "the FRP sheet". There is insufficient antecedent basis for these limitations in the claim. Appropriate correction is required.

Claim 33 recites the limitations "the upper face" and "the lower face". There is insufficient antecedent basis for these limitations in the claim. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-7, 10-15, 19, 22-24, 29 and 33 are rejected under 35 U.S.C. 102(b) as being anticipated by De Zen (5,706,620).

De Zen discloses a FRP roofing material (see col. 7, lines 13-20) comprising a sandwich structure where a pair of sheets (Fig. 3, #7 and #8)comprising FRP (see col. 8, lines 51-53) is arranged with a gap (Fig. 3, #10) between them and a rib structure (Fig. 3, #9) which joins the pair of sheets is interposed. Regarding **claims 2 and 4**, the thicknesses of the pair of sheets is 2-10 mm and the thickness of the rib is 1-3 mm (see col. 10, lines 59-64). Regarding **claim 3**, the rib structure is FRP (see col. 8, lines 50-54) and is clearly substantially integrally molded to the pair of sheets from which the sandwich structure is composed (see Fig. 3). Regarding **claim 7**, note FRP is a hybrid FRP of glass fiber (see col. 8, lines 22-27) and carbon fiber (see col. 10, lines 31-36). Regarding **claim 12**, note a filler of specific gravity lower than that of both the sheets in the gap (see col. 6, lines 27-34). Regarding **claim 13**, at least one of the sheets appears to have a jagged form in which there are alternately arranged peaks and troughs (see Figs. 8 and 13). Regarding **claim 15**, note a connecting member (Fig. 5, #13) for connecting to another member is fitted to the outer face of at least one of the sheets (see col. 11, lines 43-47). Regarding **claim 19**, the cross-sectional shape is flat sheet shaped (see Fig. 4). Regarding **claim 22**, note a plurality of the FRP roofing materials is connected together in the widthwise direction (see Fig. 4). Regarding **claim 23**, note a gap is formed between adjacent FRP roofing materials in the widthwise direction connection (see col. 5, lines 60-62). Regarding **claim 24**, the connection region is covered with a waterproof member (see col. 12, lines 28-34). Regarding **claim 33**, note core material in gap (Fig. 15, #16) and through-holes (Fig. 15, #11).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over De Zen (5,706,620) in view of Lopez-Anido et al. (6,309,732).

De Zen discloses a FRP roofing material (see col. 7, lines 13-20) comprising a sandwich structure where a pair of sheets (Fig. 3, #7 and #8) comprising FRP (see col. 8, lines 51-53) is arranged with a gap (Fig. 3, #10) between them and a rib structure (Fig. 3, #9) which joins the pair of sheets is interposed. However, De Zen fails to disclose the form of the reinforcing fiber to be that of a woven material. Lopez-Anido et al. teaches it is known in the art to have a reinforcing fiber in the form of a woven material (see col. 2, lines 21-26) for the purpose of producing a FRP roofing material.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to have modified the reinforcing material in De Zen in the form of a woven material as suggested by Lopez-Anido et al. in order to produce a FRP roofing material.

Claims 16-18, 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over De Zen (5,706,620).

De Zen discloses the claimed invention except for the specific overall thickness ratio, specific weight, specific flexural rigidity, specific length and specific width of the sandwich structure as set forth in claims 16-18, 20 and 21. Thus, one of ordinary skill in the art would have recognized that the overall thickness ratio, weight, flexural rigidity, length and width of the claimed sandwich structure would be readily determined through routine experimentation depending on the desired end results.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to have provided the specific overall thickness ratio, specific weight, specific flexural rigidity, specific length and specific width for the sandwich structure in De Zen, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Boesch and Slaney*, 205 USPQ 215 (CCPA 1980).

Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over De Zen (5,706,620) in view of Lopez-Anido et al. (6,309,732).

De Zen discloses a FRP roofing material (see col. 7, lines 13-20) comprising a sandwich structure where a pair of sheets (Fig. 3, #7 and #8) comprising FRP (see col. 8, lines 51-53) is arranged with a gap (Fig. 3, #10) between them and a rib structure (Fig. 3, #9) which joins the pair of sheets. However, De Zen fails to disclose a phenolic resin. Lopez-Anido et al. teaches it is known in the art to have a phenolic resin (see col. 7, lines 17-23) for the purpose of producing a FRP roofing material.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to have provided a phenolic resin in De Zen as suggested by Lopez-Anido et al. in order to form a FRP roofing material.

Claims 26-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over De Zen (5,706,620) in view of Ishikawa et al. (5,678,369).

De Zen discloses a FRP roofing material (see col. 7, lines 13-20) comprising a sandwich structure where a pair of sheets (Fig. 3, #7 and #8) comprising FRP (see col. 8, lines 51-53) is arranged with a gap (Fig. 3, #10) between them and a rib structure (Fig. 3, #9) which joins the pair of sheets is interposed. However, De Zen fails to disclose a fire-resistant material containing rock wool and phenolic foam. Ishikawa et al. teaches it is known in the art to have a fire-resistant material containing rock wool and phenolic foam (see col. 11, lines 39-47) for the purpose of forming a FRP roofing material.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to have provided a fire-resistant material containing rock wool and phenolic foam in De Zen as suggested by Ishikawa et al. in order to produce a FRP roofing material.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The patents are cited for further teachings of FRP roofing material similar to that instantly disclosed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Catherine Simone whose telephone number is (703) 605-4297. The examiner can normally be reached on 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Pyon can be reached on (703) 308-4251. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

CSS
Catherine Simone
Examiner
Art Unit 1772

May 16, 2002

William P. Watkins III

WILLIAM P. WATKINS III
PRIMARY EXAMINER